

SECTION 3
SEASONALLY FLOODED BASINS

VIII. Seasonally Flooded Basins

Seasonally flooded basins are poorly drained, shallow depressions that typically have standing water for a few weeks each year, but are usually dry for much of the growing season. These basins include kettles in glacial deposits (e.g., prairie potholes), low spots in outwash plains, or depressions in floodplains. They are frequently cultivated. However, even when cultivated, wetland vegetation can become established if the planted crop is stressed or drowned out. Typical species include smartweeds, beggarticks, nut-grasses and wild millet. One unique aspect of seasonally flooded basins is that the alternating periods of flood and drought can eliminate perennial plants so that annual plant species typically dominate the community.

Seasonally flooded basins are of critical importance for waterfowl and shorebirds. These temporary water holding basins frequently have an abundance of invertebrates and plant seeds, which makes them ideal feeding and resting areas for migrating waterfowl and shorebirds. In spring, seasonally flooded basins are used as pairing ponds by ducks, and the abundant invertebrate population provides a protein-rich diet for egg-laying hens.



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VEGETATION: The seasonally flooded basin shown by the photograph is located in a corn (*Zea mays*) field and was photographed in May when little or no vegetation was visible. Annual species, and other species adept at colonizing mudflats, would become established later in the growing season.

SOILS: Ashkum silty clay loam (Typic Endoaquolls), a poorly-drained soil underlain by calcareous glacial till in drainageways and depressions. Landscape position of this example is a shallow, closed depression in the nearly level plain of Glacial Lake Chicago.

HYDROLOGY: Ponding following spring snowmelt and rainfall events, as well as a high water table. Ashkum soils have a seasonal high water table with 12 inches of standing water to a water table 24 inches below the surface during April through June of most years.

LOCATION: Kenosha County, Wisconsin.

SEASONALLY FLOODED BASINS



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VEGETATION: The seasonally flooded basin shown above is within an alfalfa (*Medicago sativa*) field. When this photograph was taken in late August, the mudflats left by the ponded conditions of the early growing season had been colonized by nearly 100 percent vegetative cover dominated by nodding smartweed (*Persicaria lapathifolia*) and pinkweed (*Persicaria pensylvanica*). Other species present include foxtail (*Setaria viridis*), wild millet (*Echinochloa crusgalli*), common ragweed (*Ambrosia artemisiifolia*) and goosefoot (*Chenopodium album*).

SOILS: Glencoe silty clay loam (Cumulic Endoaquolls), a very poorly-drained mineral soil formed in glacial till. Landscape position is a prairie pothole depression in gently rolling terrain. Under natural conditions, this was a closed basin (no defined outlet or inlet).

HYDROLOGY: Ponding following spring snowmelt and heavy summer rainfall events, as well as a high water table. In an undrained condition, Glencoe soils have a seasonal high water table with 12 inches of standing water to a water table 12 inches below the surface during October through July of most years. However, the above example has been partially drained by a surface ditch converting this hydrologic regime to that of a seasonally flooded basin – ponded for only a few weeks during most growing seasons.

LOCATION: Nicollet County, Minnesota.

SEASONALLY FLOODED BASINS



Post growing season. Seasonally flooded basins often become ponded following the close of the growing season. The example above illustrates conditions in early November following a snowfall that subsequently melted. In the center of the basin, the planted crop -- soybeans (*Glycine max*) -- either drowned out or was not planted that year. The outer edges of the basin were apparently too wet for the farmer to harvest the soybeans still visible. In general, the waste grain, seeds of volunteering annuals, mudflats and shallow water provided by seasonally flooded basins are of critical importance for the autumn migration of waterfowl and shorebirds. Additionally, the waste grain and seeds are an important autumn/winter food source for upland wildlife including ring-necked pheasant, gray partridge, sharp-tailed grouse, mourning dove and white-tailed deer.

SEASONALLY FLOODED BASINS



BLUNT SPIKE-RUSH

(*Eleocharis obtusa* (Willd.) Schult.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (3)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A densely tufted, annual sedge with fibrous roots. The stems are up to 50 cm. in height, 0.5-2 mm. thick with sheaths that are oblique at the apex. Spikelets are ovoid, up to 16 mm. long and many-flowered. Nutlets (achenes) are lens-shaped, obovoid and 0.7-1.2 mm. long with a triangular (deltoid)-shaped cap (the tubercle) that is a different color and texture than the body of the achene. The tubercle is about three-fourths to nearly as wide as the broadest part of the achene. Bristles subtending the achene usually number 6-7 and equal or exceed the length of the nutlet (achene).

ECOLOGICAL NOTES: Blunt spike-rush is a frequent colonizer of mudflats, shorelines and marshes. It is commonly found in disturbed, saturated soils such as those of farmed wetlands and wetland creation or restoration sites. The authors have chosen to follow the nomenclature given by Swink and Wilhelm (1994) and Voss (1972). Gleason and Cronquist (1991) lump *E. obtusa*, as well as *E. engelmannii* (Steudel), under *E. ovata* (Roth) Roemer & Schultes.

SOURCE: Voss (1972); Swink and Wilhelm (1994); Gleason and Cronquist (1991); Great Plains Flora Association (1991); and Britton and Brown (1970).

SEASONALLY FLOODED BASINS



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WILD MILLET

(*Echinochloa crusgalli* (L.) Beauv.)

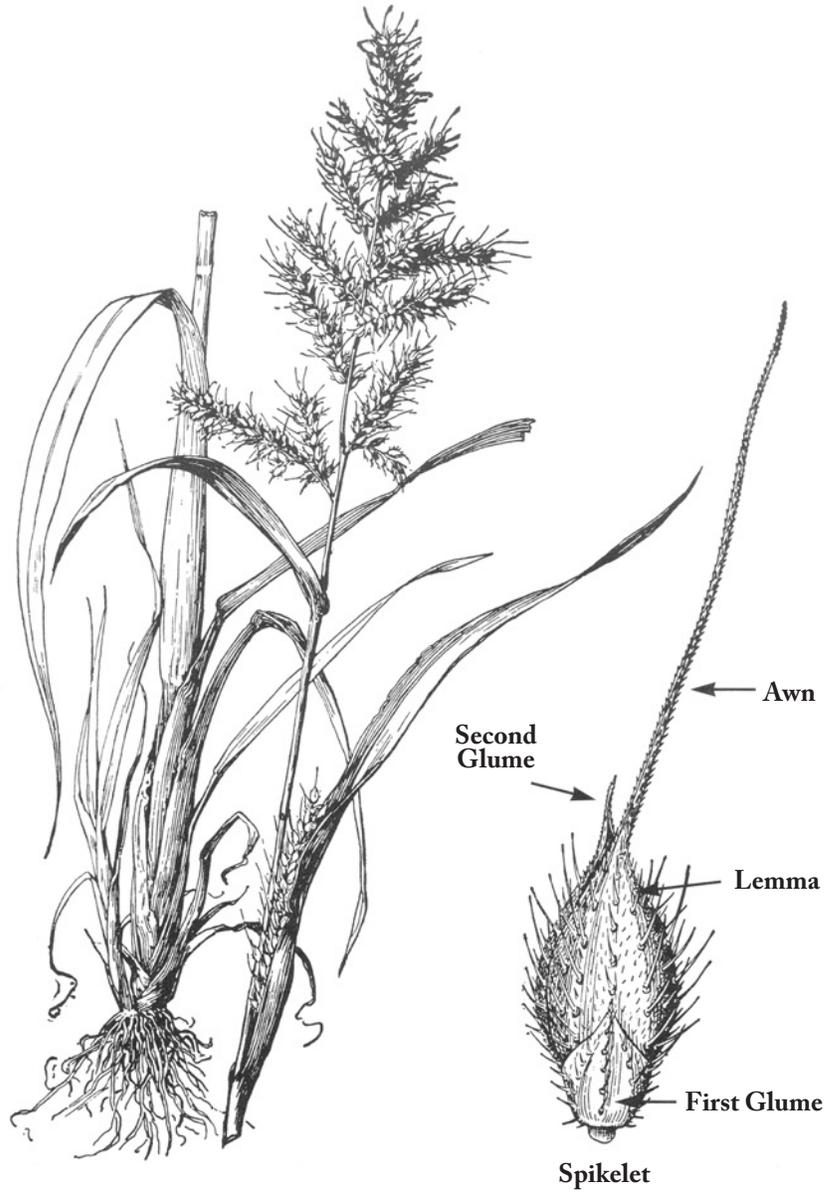
GRASS FAMILY (Gramineae or Poaceae) **C of C:** Introduced (0) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An annual grass with a stout stem usually 10-100 cm. tall. Leaves are lanceolate and 0.5-1.5(2.3) cm. wide. The inflorescence is a panicle 3-25 cm. long that is often green- to purple-tinged. The inflorescence has a bristly appearance because of numerous spines covering the spikelet, as well as an awn. The length of the awn is quite variable and may be pronounced (as shown by the ink drawing) or nearly lacking. In flower June-November.

ECOLOGICAL NOTES: Wild millet is found in disturbed areas such as cultivated lands and vacant urban parcels. It also occurs in fresh (wet) meadows and along streambanks. *Echinochloa crusgalli* is a native of Europe and has become naturalized here. Two native species of *Echinochloa* also occur in Minnesota and Wisconsin: *E. muricata* and *E. walteri*. Note that *E. muricata* appears in some floras under the incorrect name of *E. pungens* (Voss 1972). Some authorities have lumped *E. muricata* and *E. pungens* under *E. crusgalli*. See the discussion in Swink and Wilhelm (1994).

The seeds are an important food for waterfowl and mourning doves, as well as many other birds.

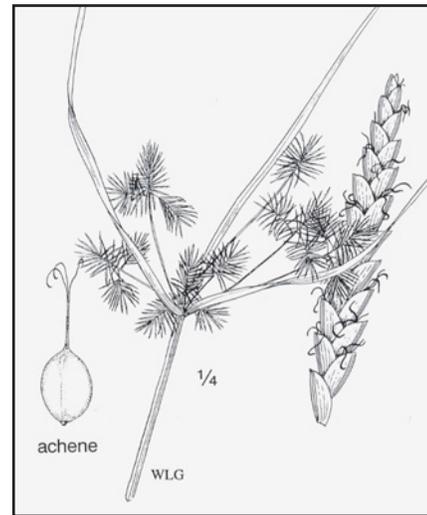
SOURCE: Fernald (1970); Gleason and Cronquist (1991); Martin *et al.* (1951); and Voss (1972).



Wild Millet
(*Echinochloa crusgalli*)

Illustration from Hitchcock (1950).

SEASONALLY FLOODED BASINS



RED-ROOT FLATSEDGE

(*Cyperus erythrorhizos* Muhl.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (2)

IND. STATUS: OBL

FIELD CHARACTERISTICS: An annual, cespitose sedge from fibrous, blood-red roots. Stems are 10-70 cm. tall, smooth and bluntly triangular. Leaves are 2-10 mm. wide with scabrous margins. The inflorescence is a compound umbel with one to several spikes with numerous crowded spikelets that are 8- to 39-flowered and very narrow. Small wings along the rachilla are deciduous. Scales are 1.1-1.6 mm. long and reddish brown with a green keel. Nutlets are three-sided, ovoid, 0.7-0.8 mm. long and gray, ivory or white in color.

ECOLOGICAL NOTES: Red-root flatsedge occurs on mudflats, riverbanks, borders of marshes and sandy or muddy shores. The specimen shown by the photograph was collected from a recently excavated, sandy, wetland creation site with saturated soils.

In general, members of the genus *Cyperus* have spikelets with scales in two ranks so that they are flattened, hence one common name of "flatsedge." Unlike some other members of the sedge family, the nutlets of *Cyperus* species lack a beak and are not subtended by bristles. There are approximately 14 species of *Cyperus* found in Minnesota and Wisconsin. Some species (e.g., *C. esculentus*) may become a nuisance to agriculture. However, the nutlets and tubers are a food source for wildlife.

SOURCE: Great Plains Flora Association (1991); Voss (1972); Fassett (1957); and Gleason and Cronquist (1991).

SEASONALLY FLOODED BASINS



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FALSE NUT-SEDGE

(*Cyperus strigosus* L.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (1)

IND. STATUS: FACW

FIELD CHARACTERISTICS: A short-lived perennial herb with stems arising from rhizomes. The stems are bulbous at the base. Stems may be single to few, sharply triangular, and up to 60(100) cm. tall. Leaves are crowded at the base, and are 2-10(15) mm. wide. The short, cylindric spikelets are usually branched at their base with numerous spikelets. The spikelets spread from the rachis at nearly right angles and are strongly compressed. The keeled scales are longer than wide, 3.5(3)-4.5(5) mm. long, persistent, and overlap each other toward the tips. The scales have a greenish mid-rib with yellowish-golden sides and are not out-curved at their tips (appressed). The scales and spikelets are deciduous at maturity. There are 3 stigmas and 3 stamens present. The nutlet is linear, 1.5-2 mm. long, and triangular in cross section.

ECOLOGICAL NOTES: False nut-sedge is one of the more common nut-sedges. It can be found in a variety of wetlands, including farmed wetlands and mudflats.

SOURCE: Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).

SEASONALLY FLOODED BASINS



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SLENDER (SHINING) FLATSEDGE (*Cyperus rivularis* Kunth.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (3)

IND. STATUS: FACW

SYNONYM: *Cyperus bipartitus* Torr.

FIELD CHARACTERISTICS: A tufted, annual herb with stems about 10-20(40) cm. tall. Stem leaves are 1-3 mm. wide and usually shorter than the stem. The spikes are sessile, with 3-10 spikelets that each have several flowers. Mature scales are strongly pigmented a red-brown color toward the base and margins. The scales are egg-shaped, 2-2.5 mm. long, with a prominent vein that becomes incurved toward the tip. The scales are deciduous at maturity. There are 2 stigmas present. The lens-shaped nutlets are smooth, two times longer than wide, 1-1.5 mm. long, rounded at the tip and brownish in color (not black).

Slender flatsedge can be confused with *Cyperus diandrus*, which has reddish colors concentrated more towards the tip of the scales. The scales also tend to persist at maturity.

ECOLOGICAL NOTES: Slender flatsedge occurs along lake and pond shores and in shallow marshes, ditches and swales. This annual is a colonizer of disturbed, wet soils such as those of farmed wetlands.

SOURCE: Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).

SEASONALLY FLOODED BASINS



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Nutlets

PINKWEED

(*Persicaria pensylvanica* (L.) M. Gomez)

SMARTWEED FAMILY (Polygonaceae)

C of C: Native (1)

IND. STATUS: FACW

SYNONYM: *Polygonum pensylvanicum* L.

FIELD CHARACTERISTICS: An annual herb growing to a height of 2 m. (but sometimes growing along the ground). The leaves are lanceolate, 3-15 cm. long and 1-4 cm. wide. Ocreae are 0.5-1.5 cm. long with a margin that is entire or irregular, but not fringed with bristles. The inflorescence is cylindrical, 2-3 cm. long and 1-1.5 cm. wide. The flower stalk (peduncle) has abundant, glandular hairs (use 10x lens). Flowers are white to pink to rose and 3-4 mm. long. Fruit is a shiny, lens-shaped nutlet 2.2-3.5 mm. broad. In flower July-September.

ECOLOGICAL NOTES: Pinkweed is found in shallow marshes and disturbed areas, especially on recently exposed mudflats, cultivated land, and dredged material disposal sites. There are about 30 species of smartweeds (*Persicaria*, *Polygonum*) in Minnesota and Wisconsin. The nutlets of pinkweed, and smartweeds in general, are an important food source for waterfowl and many songbirds.

SOURCE: Fernald (1970); Gleason and Cronquist (1991); Martin *et al.* (1951); and Voss (1985).

SEASONALLY FLOODED BASINS



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NODDING SMARTWEED

(*Persicaria lapathifolia* (L.) S.F. Gray)

SMARTWEED FAMILY (Polygonaceae)

C of C: Native (2)

IND. STATUS: FACW

SYNONYM: *Polygonum lapathifolium* L.

FIELD CHARACTERISTICS: An erect, taprooted, annual herb growing to 1.5 m. in height. Leaves are variable but usually lanceolate and acuminate, often woolly underneath. Ocreae (swollen joints of stem) are not fringed with hairs (unlike some similar species). Inflorescence consists of numerous, nodding racemes that are 1-5 cm. long. Flowers (tepals) are white to pink to green and 3-4 mm. long. The outer tepals are strongly 3-nerved, each nerve divided at the summit into 2 recurved branches. The nutlet is 2-sided (lenticular) and 1.7-3.2 mm. long. In flower July-September.

ECOLOGICAL NOTES: Nodding smartweed is a common colonizer of all types of disturbed, wet to moist soils. Typical habitats include farmed wetlands, mudflats, roadsides, ditches and construction sites.

SOURCE: Gleason and Cronquist (1991); and Black and Judziewicz (2009).

SEASONALLY FLOODED BASINS



Photos by Steve D. Eggers

WATER PEPPER

(*Persicaria hydropiper* (L.) Delarbre)

SMARTWEED FAMILY (Polygonaceae)

C of C: Introduced (0)

IND. STATUS: FACW

SYNONYM: *Polygonum hydropiper* L.

FIELD CHARACTERISTICS: An erect or sprawling, annual herb growing to 60 cm. Stems are glabrous and often reddish. Leaves are narrowly lanceolate to lance-ovate, 0.4-2.5 cm. wide, and have a sharp, peppery taste. Ocreae (swollen joints of stem) are fringed with short hairs, those of the upper half of the stem concealing self-pollinating flowers that remain closed. The inflorescence consists of racemes that are commonly nodding at the summit. Flowers (tepals) are greenish, usually with rose-pink (white) margins, and are dotted with glands (punctate). The nutlet is 2-sided, or more commonly 3-sided, dark brown to black, dull, rough, and 2.2-3.3 mm. long. In flower July-August. Contrast these characteristics with those of dotted smartweed (*Persicaria punctata*).

ECOLOGICAL NOTES: Water pepper is a common colonizer of all types of disturbed, wet to moist soils. Typical habitats include farmed wetlands, mudflats, roadsides, ditches, construction sites and edges of marshes.

SOURCE: Crow and Hellquist (2000); Gleason and Cronquist (1991); and Black and Judziewicz (2009).

SEASONALLY FLOODED BASINS



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LADY'S THUMB

(*Persicaria maculosa* S.F. Gray)

SMARTWEED FAMILY (Polygonaceae) **C of C:** Introduced (0) **IND. STATUS:** FACW

SYNONYM: *Polygonum persicaria* L.; *Persicaria persicaria* (L.) Small

FIELD CHARACTERISTICS: An annual herb with upright to spreading stems 20-80 cm. long. Leaves are lance-shaped, 3-15 cm. long and 0.5-3 cm. wide. Upper leaf surfaces usually have a dark blotch somewhat resembling a thumb print. Undersides of leaves are often dotted with small glands. Ocreae are 5-15 mm. long with short hairs and fringed with bristles. Flowers are rose to pink in erect, cylindric racemes 1-4 cm. long and 0.5-1 cm. wide. Fruit is a black, shiny nutlet usually lens-shaped but may be 3-angled, 2-3 mm. long. In flower July-September.

ECOLOGICAL NOTES: Introduced from Europe, lady's thumb is a common colonizer of all types of disturbed, wet to moist soils. Typical habitats include farmed wetlands, streambanks, mudflats, roadsides, ditches, construction sites and edges of marshes. Voss (1985) cautions that other smartweeds, e.g., *Persicaria lapathifolia* and *P. hydropiperoids*, sometimes have a dark blotch on the leaves; therefore, other characters need to be used to separate these species. For example, the ocreae of *P. lapathifolia* are not fringed with bristles in contrast to those of *P. maculosa*.

SOURCE: Chadde (2011); and Gleason and Cronquist (1991).

SEASONALLY FLOODED BASINS



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CURLY DOCK

(*Rumex crispus* L.)

SMARTWEED FAMILY (Polygonaceae)

C of C: Introduced (0)

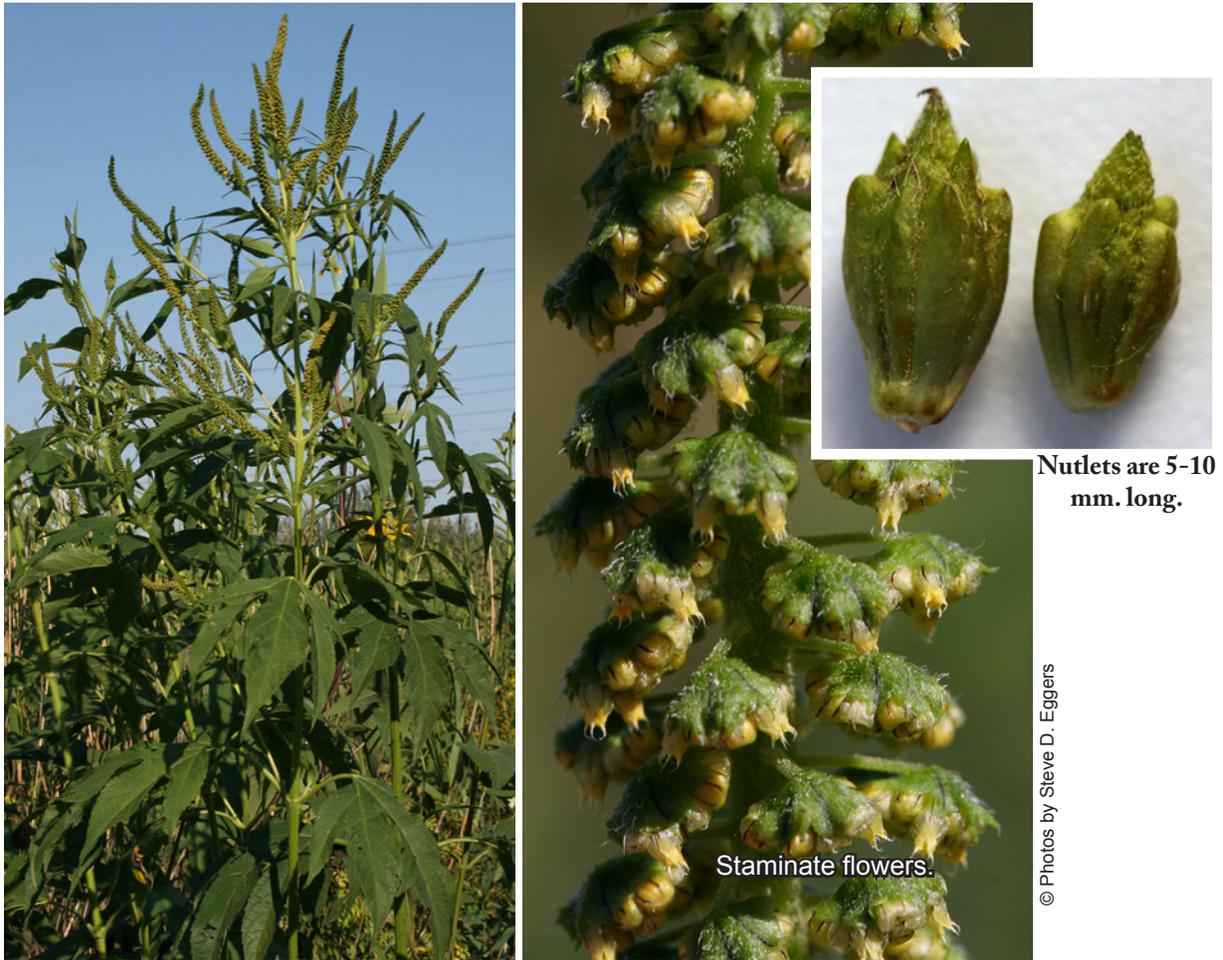
IND. STATUS: FAC

FIELD CHARACTERISTICS: A stout, taprooted, perennial herb 50-150 cm. in height. Leaves are strongly crisped (wavy). Basal leaves are large, 10-30 cm. long and 1-5 cm. wide, commonly rounded or subcordate at the base, and on long petioles. Leaf shape is lance-like to oval. Stem leaves are smaller with shorter petioles. Inflorescence consists of large, branched panicles. Flower stalks drooping at the tips, 5-10 mm. long, with a swollen joint at the base. Valves are heart-shaped to broadly ovate, 4-5 mm. long and as wide, with more or less smooth margins. Grains number 3 and are often of unequal size. Fruit is a brown achene 2-3 mm. long. In flower July-September.

ECOLOGICAL NOTES: Curly dock is a Eurasian species that has become a common weed and colonizer of all types of disturbed, wet to moist soils. Typical habitats include farmed wetlands, stormwater detention basins, mudflats, roadsides, ditches, construction sites and edges of marshes.

SOURCE: Chadde (2011); and Gleason and Cronquist (1991).

SEASONALLY FLOODED BASINS



GIANT RAGWEED

(*Ambrosia trifida* L.)

ASTER FAMILY (Compositae or Asteraceae) **C of C:** Native (0) **IND. STATUS:** FAC

FIELD CHARACTERISTICS: A weedy, annual herb to 2(5) m. in height. The erect stems have spreading hairs in the upper part. Leaves are opposite, stalked, simple, and unlobed to 3-5 palmately divided lobes. The staminate and pistillate flowers occur in separate heads. Pistillate flowers arise from the leaf axils, while staminate flowers occur as terminal and near-terminal spike-like structures. The distinctive bur-like nutlets develop in the leaf axils, are 5-10 mm. long, and have several distinct ribs that terminate as blunt spines.

ECOLOGICAL NOTES: Giant ragweed often forms large monotypic colonies on moist to wet, waste ground and the recently cultivated fields of floodplains. It also occurs along the margins of ponds, streams and ditches.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).

SEASONALLY FLOODED BASINS



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COMMON COCKLEBUR

(*Xanthium strumarium* L.)

ASTER FAMILY (Compositae or Asteraceae)

IND. STATUS: FAC

C of C: Native (0 MN)(1 WI)

FIELD CHARACTERISTICS: An annual herb growing to 20-200 cm. in height. Leaves have long petioles and are broadly ovate to suborbicular or reniform, and generally cordate or subcordate at the base. Leaves are shallowly lobed and up to 15 cm. long. Staminate heads are in a terminal cluster. Pistillate heads are in several to many short, axillary branches. Burs are broadly cylindrical to ovoid or subglobose, 1-3.5 cm. long, covered with stout, hooked prickles. Burs become somewhat woody with age. In bloom August-September.

ECOLOGICAL NOTES: Common cocklebur is a frequent colonizer of exposed, wet to moist soils. In particular, it colonizes farmed wetlands where the planted crop is drowned out or never planted due to wet conditions. Mudflats left after high water events in stormwater ponds, prairie potholes or along shores, are other favored habitats. It is the bane of those who own long-haired dogs.

SOURCE: Gleason and Cronquist (1991); and Black and Judziewicz (2009).

SEASONALLY FLOODED BASINS



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BEGGARTICK

(Bidens cernua L.)

ASTER FAMILY (Compositae or Asteraceae)

IND. STATUS: OBL

C of C: Native (3 MN)(4 WI)

FIELD CHARACTERISTICS: An annual herb growing to 10-100 cm. in height. Leaves are opposite, simple, sessile, and serrate to somewhat serrate. Flower heads are erect, but then become nodding with age. The flower disc is 12-25 mm. wide. Rays, if present, are yellow and up to 1.5 cm. long. Nutlets are smooth, curved, 5-8 mm. long and have 4 (rarely 2) barbed awns. In flower August-October.

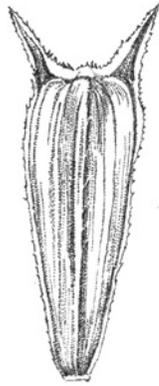
ECOLOGICAL NOTES: Beggartick is found in fresh (wet) meadows, shallow marshes, along shores, and in areas of disturbed or exposed, wet soils and mudflats. Another name for beggarticks is stick-tights. Walking through a stand of these plants in late summer or autumn results in numerous barbed nutlets adhering to clothing.

SOURCE: Fernald (1970); and Gleason and Cronquist (1991).

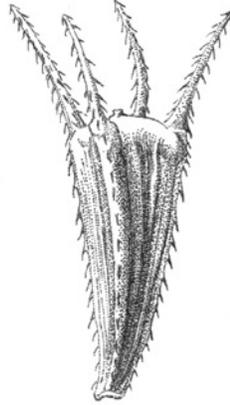
Nutlets of Some
Common *Bidens*



Bidens comosa



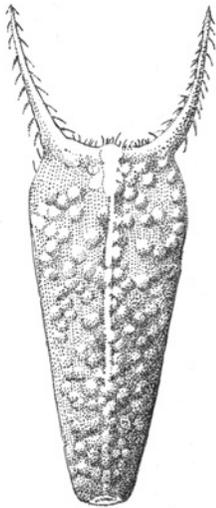
Bidens coronata



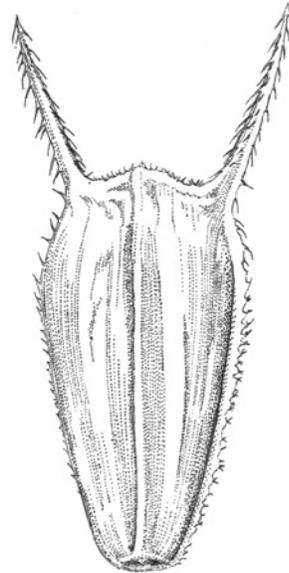
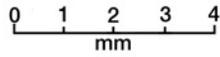
Bidens cernua



Bidens aristosa



Bidens frondosa



Bidens vulgata

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